Reporting Federal Activities . . .

Higher Education

Features for OCTOBER 1960

Federal Programs in a State University

By J. KENNETH LITTLE

The Marshall Scholarships

By ROBERT W. MORRIS

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Office of Education

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Federal Programs in a State University

By J. KENNETH LITTLE *

THE MAJOR universities of the Nation are becoming an increasingly strong arm of the Federal Government in the accomplishment of vital national objectives. Since World War II, the number and volume of Federal programs which use the resources of institutions of higher education have grown apace. Hundreds of millions of dollars are flowing annually from many Federal agencies to many colleges and universities for many purposes. Few of these programs are conceived as aids to institutions of higher education. Typically, they focus upon specific national objectives in health, science, national security, and international understanding. They emphasize research and the quality and supply of higher specialized manpower. For such purposes, colleges and universities are the Nation's prime resource.

The impact of Federal programs falls heaviest upon institutions that have well-established graduate, professional, and technical schools, but effects of varying magnitude are felt throughout the entire structure of higher education.

The extent to which Federal agencies and universities are now cooperating in the accomplishment of common objectives is indicated by the following description of Federal programs in a major complex State university and land-grant college, one with all of its basic colleges and professional schools on one campus.

*Named Feb 22, 1960, by U.S. Commissioner of Education L. G. Derthick, as Director, Survey of Federal Programs in Higher Education. Until then, Dr. Little was Associate Director of the Big Ten Universities and the University of Chicago. Previously, he had held a comparable position for the Joint Staff of the Coordinating Committee for Higher Education for the State of Wisconsin. He entered the field of higher education as a professor of education and Director of Educational Field Services of the Extension Division of the University of Wisconsin in 1934. Dr. Little was U.S. Deputy Commissioner of Education from May 1954 to June 1955, when he returned to the University of Wisconsin. A native of Sterling, Kansas, he taught in the Pawnee Rock, Kansas, High School from 1928 to 1931. He obtained his M.A. at Kansas State Teachers College in 1931, and his Ph. D. at Ohio State University in 1934.

Growth in Federal Activity

The rapid growth of federally sponsored activity in this institution is reflected by the growth in income from Federal funds as follows:

Income	1953–54	1958–59	Percent increase
Federal appropriation	$1, 255, 500	$2, 290, 200	82
Federal contracts and services	1, 585, 400	5, 326, 600	236
Total	2, 840, 900	7, 616, 800	168

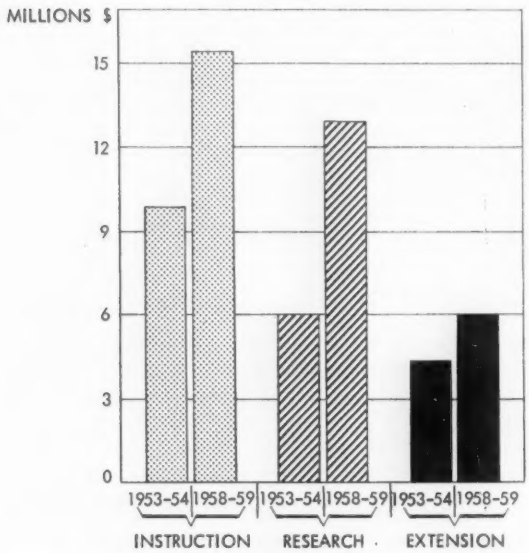
The general effect of growth in federally sponsored programs has been to change the proportion of expenditures for the three basic functions of the university—instruction, research, and public service. The growth in support for each of these functions is shown in chart I.

Note the rapid growth of research between 1953–54 and 1958–59. Figures for 1959–60 would no doubt show a further increase.

Federal programs also provide many opportunities for employment of graduate students in university research programs. In April, 1960, Federal programs were providing 180 fellowships, 245 research assistantships, and 272 project assistantships in this university.

From these facts it is clear that the opportunities for significant research by the university staff have

Chart I.—Growth in support of basic functions in one university



been greatly expanded, and the means for providing useful research training to graduate students greatly increased through federally sponsored programs.

The Federal agencies sponsoring programs in which the university participates and the colleges, schools, or other major units of the university in which the Federal programs are operating are shown in the table. In 1958–59, the university received Federal funds from at least 20 different Federal agencies or divisions of agencies (not all such divisions are shown in the table. The funds came from 419 different grants or contracts and included grants for the construction of research facilities; the purchase of equipment; contracts or grants for research; the establishment of fellowships; the administration of conferences, institutes, and other education centers or programs; the operation of educational missions in foreign countries; and loans to students. These programs were in addi ion to those traditionally sponsored under the Federal legislation governing appropriations to land-grant colleges.

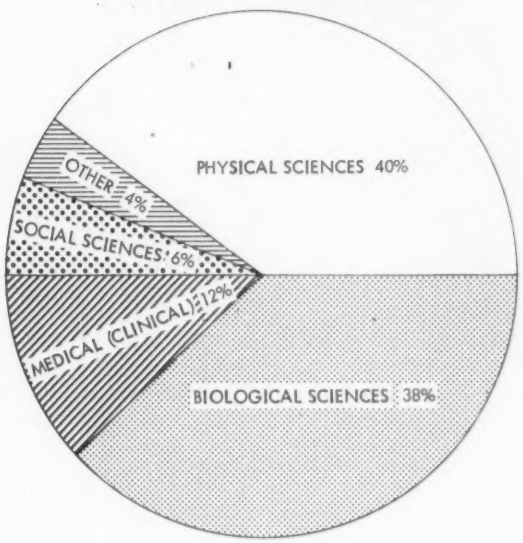
The Federal programs cover a wide band of the total university curriculum. In 1958–59 at least one member of the professional staff of 60 of the 88 instructional departments was participating in programs sponsored by a Federal agency. Some departments received funds for projects sponsored by as many as six different agencies. An alphabetic listing of the departments of instruction in the university is shown on page 19. The spread in participation has been growing. In 1953–54, only 38 departments received funds restricted to use on federally sponsored projects; in 1958–59, the number was 60. One Federal agency alone provided funds to as many as 40 departments. When all departments of the college of agriculture are included and when departments are added which have staff members engaged in other types of Federal assignments, more than 75 percent of the instructional departments were participating in some type

A University's participation in programs of Federal agencies, 1958–59

Federal department or agency	Agriculture	Commerce	Education	Engineering	Graduate school	Law	Letters and science	Medicine	Administration	Extension division	Enzyme Institute
Defense Department											
Air Force	x						x	x			
Army	x			x			x	x			
Navy	x			x			x	x			x
Health, Education, and Welfare											
Office of Education			x				x	x			
Office of Vocational Rehabilitation							x	x			
Public Health Service	x		x	x	x		x	x	x		x
Atomic Energy Commission	x			x	x		x	x			x
National Science Foundation	x		x	x	x		x	x		x	x
Department of Agriculture	x			x							
Department of Commerce							x				
Department of Interior	x						x				
Department of State	x			x		x	x				
Veterans Administration									x	x	
Tennessee Valley Authority	x										
Housing and Home Finance Agency									x		

of federally sponsored program in 1958–59. Participation in new programs authorized by the National Defense Education Act of 1958 would probably increase the coverage in 1960.

Chart II.—Distribution of $5,326,000 in Federal funds, in one university, by field, 1958–59



TOTAL - $5,326,000

The Federal programs engage the services, part time or full time, of substantial segments of the university faculty. The extent of faculty participation in 1958–59 in the several colleges of the university was as follows:

	Percent		*Percent*
Agriculture	23	Law	7
Engineering	18	Medicine	49
Liberal arts	27	Pharmacy	43
Education	29	Commerce	3

More than 2 of every 10 members of the university's permanent professional staff in academic departments and about 7 out of every 10 professors in the biological and physical sciences were engaged in a Federal program in 1958–59.

Federal Programs Reflect National Objectives

As pointed out earlier, Federal programs tend to have specific missions, and their administering agencies aim at procuring quality products and efficient accomplishment of their missions. Their programs stress excellence in specialized ventures, not balance in the programs of higher education. Current Federal programs reflect these preoccupations. The result is shown by the concentration of federally sponsored programs among the major areas of the university curriculum in 1958–59. Chart II groups the departments listed on page 19 into the biological sciences, the physical and mathematical sciences, the social sciences, and other fields, and shows the proportion of the Federal funds going to each group of departments.

Since 1958–59, programs of the National Defense Education Act have broadened the missions of Federal programs. Despite the importance of the NDEA programs, their addition would not substantially alter the proportions shown in the charts.

All Sources of Support Increase

Concern has sometimes been expressed over the effect of large scale Federal activity upon university income from other sources of support. The following information shows the trend in funds received from State government, Federal agencies, and private sources which were used for the general and educational expenses of the university.

Although the State provided more than half of the funds for increased expenditures in 1954 and 1959, by the latter year the State's contribution to the total expenditures had declined from 80 percent to 68 percent.

The shifts in base of support for the university's major functions—instruction, research, and extension service—are shown below.

Function by year	State (Percent)	Federal (Percent)	Nongovernment (Percent)
Instruction			
1953–54	98	1	1
1958–59	93	4	3
Research			
1953–54	42	29	29
1958–59	28	42	30
Extension			
1953–54	80	*19	1
1958–59	74	*24	2

*Primarily agricultural extension.

The division of State funds between the functions of research and teaching does not fully reflect the

State's total contribution to research activity. An unidentified part of the percentages shown as the State's contributions to instruction should be credited to research. Except in the college of agriculture, research was not budgeted as a separate function. On the other hand, an unidentified part of instruction was supported by research funds from outside sources. It was general university policy, however, to pay salaries of university professors from State funds.

As shown earlier, the research function is rapidly expanding, and the means for this expansion are coming primarily from the Federal Government and gifts and grants from private sources. Instruction is taking an increasingly larger part of the State's dollars. The State is also having to provide additional physical facilities for both instruction and research.

Widespread Support for Research

The growth of Federal funds for research over the past 20 years has been accompanied by rise in research support from all other sources, as shown in chart III. In 1958–59, more than 190 different industries, foundations, societies, and associations from all parts of the United States contributed funds for research in the university. Within the past 5 years, both private contributors and the Federal Government have surpassed the State in providing funds for research.

Chart III.—Growth in support of research in one university, by source, 1938–58

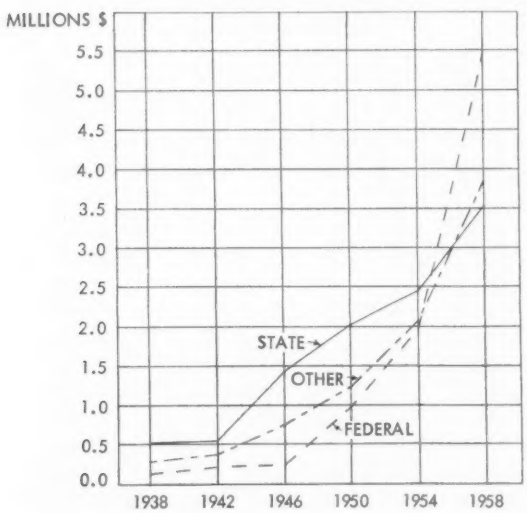
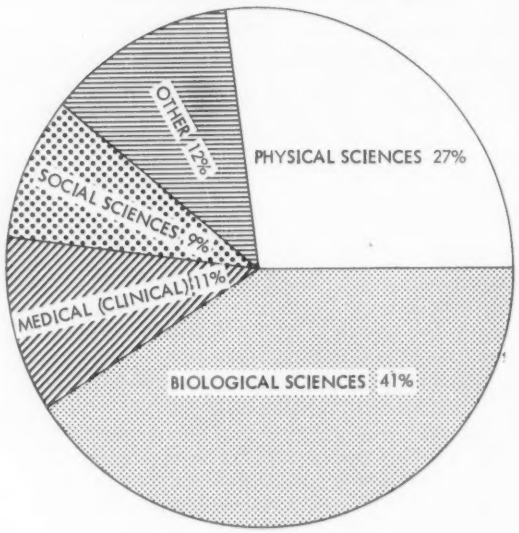


Chart IV.—Distribution of nongovernment gifts and grants in one university, 1958–59



TOTAL- $3,800,000

As shown in chart IV, the distribution of support from private gifts and grants to the university's programs resembles the distribution of Federal funds as shown in chart II. Larger proportions of private funds than of Federal funds went to the biological and medical fields and to the social sciences, and a smaller proportion to the physical sciences, other than chemistry.

State appropriations included in 1958–59 about $225,000 for the graduate school for research not restricted to specified fields. The graduate school distributed this money among the major areas of the university's program as follows:

	Percent
Social sciences	52
Humanities	27
Biological sciences	5
Other	16

The biological, physical, and social sciences have about the same number of faculty members of professional rank. Between 60 and 70 percent of the professors in the biological and physical sciences,

(*Continued on p. 18*)

The Marshall Scholarships

By ROBERT W. MORRIS*

IN SEPTEMBER 1960, the seventh group of Marshall scholars sailed for England to take up residence for 2 years at their universities. In November the annual competition will begin for the academic year 1961–62. In this competition the arrangements made for selection will be different from those obtaining in the past. Because Her Majesty's Government has decided to double the number of scholarships awarded annually, interviews will be held in five centers rather than four, and some awards will be made to the country "at large." It would therefore seem opportune to review the scheme when interest in it will become more widespread in this country.

In Appreciation of Marshall Aid

Marshall scholarships were established by Act of Parliament in 1953 as a memorial, expressing, through the award of university scholarships to American students, the United Kingdom's gratitude for the generosity of the people of the United States in promoting the program for European recovery—the Marshall Plan.

To carry out the project, the Marshall Aid Commemoration Act of 1953 set up the Marshall Aid Commemoration Commission in London to administer the awarding each year of 12 scholarships, to be financed by the British Government. The number of annual awards was raised to 24 in December 1959 by an amending act, which at the same time provided that the number might be further increased from time to time as circumstances warrant. It was characteristic of the late General George C. Marshall that he readily agreed at the time to lend his name to the proposed awards. The Marshall scholarships were launched as a unified action by both major political parties and with the promise of the goodwill and support of all the universities in the United Kingdom.

The Commission

The Marshall Aid Commemoration Commission, which meets in London, administers the grants and makes the final selection of the scholars. The Executive Secretary of the Commission assists in placing the scholars in universities in the United Kingdom and keeps in constant touch with them during their stay.

The Commission comprises from seven to ten members, all appointed by the Secretary of State for Foreign Affairs. The present Chairman is Lord Coleraine. He is assisted by eight men and women distinguished in academic and public life in Britain and in Anglo-American circles. Norah L. Penston, one of the two women, is a scientist and Principal of Bedford College of the University of London. Sir Eric Ashby, an ex officio member by virtue of his being Vice-Chairman of the Association of Universities of the British Commonwealth, is also a scientist and Master of Clare College, Cambridge.

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* First Secretary dealing with educational matters at the British Embassy in Washington. Born in 1914, Mr. Morris was educated at the Cathedral School, Hereford, before going up to Cambridge as a Major Scholar to Gonville and Caius College. There he took a First Class in both parts of the Mathematics Tripos, and went on to teach, first at Harrow School, and afterwards at Cheltenham. Subsequently he spent seven years, including the war years on the staff at the Royal Naval College, Dartmouth. He was a school master for eleven years before entering the service of the British Government in 1946.

In January 1947, Mr. Morris joined the Ministry of Education as H. M. Inspector of Schools, in which capacity he served successively as District Inspector for the county of West Sussex, and for the County Borough of Manchester. In January 1957, he was seconded to the Foreign Office to assume his present post.

M. W. Dick was, until recently, Senior Tutor of Balliol, and J. S. Fulton, formerly Vice-Chancellor of the University of Wales, is the first Principal of the newly established University College of Sussex, which will open its doors to students in 1961. His membership insures a link with a new institution and conforms with the policy of keeping the Commission as broadly based and as representative as possible.

John Foster, Secretary of the Vice-Chancellor's Committee and of the Association of Universities of the British Commonwealth, has served as Executive Secretary to the Commission since its inception.

Regional Committees and Advisory Council

The initial selection of Marshall scholars is made in the United States by regional committees, which consider all candidates and select those whom they subsequently interview. An advisory council in Washington then meets to consider the recommendations made by the regional committees and forwards its recommendation to the Commission in London.

The advisory council is presided over by Her Majesty's Ambassador in Washington, and is composed of Americans who serve at his invitation. Present members of the Advisory Council are Detlev W. Bronk, Margaret Clapp, Lewis Douglas, Gordon Gray, Paul Hoffman, Glen A. Lloyd, David K. E. Bruce, Arthur Adams, Roy Nichols, and Carl Bode.

The regional committees are similarly composed of distinguished American citizens representative of the academic, professional, and public life in their regions, and each committee includes, ex officio, the British Consul-General at the regional center. Among the regional chairmen now holding office are William Aydelotte, Philip Davidson, James Hart, and Grayson Kirk.

The assistance and advice of the American members of the Committees and of the Council have proved invaluable, not only in the selection of Marshall scholars but in the general administration of the scheme.

Distinction of Intellect and Character

The selection process and the selection machinery have been carefully organized to insure the nomination of the best possible scholars. In the words of the original remit: "In appointing Marshall Scholars the selectors will look for distinction of intellect and of character as evidenced both by their scholastic attainment and by their other activities and achievements. Preference will be given to candidates who combine high academic ability with the capacity to play an active part in the life of the United Kingdom university to which they go."

The regional committees are, therefore, required to look for more than mere academic excellence as represented by high grades, though these indeed the candidates must have. They seek to choose those candidates who, above all, possess the qualities of good representatives of their country—the ability to mix well and to engage in full and intelligent discussion of things of interest to intelligent people. At the same time they have to possess the intellectual capacity to undertake advanced university work.

For Graduates

One of the conditions of an award of a Marshall scholarship is that the recipient must already be a graduate of an accredited American university or college, or must become a graduate before taking up the award. Thus a candidate who wishes to start work at a British university immediately after graduating from college must apply for a scholarship at the beginning of his senior year. About one half of all the awards made so far have gone to college seniors.

There is no lower age limit, but an applicant is not usually eligible unless he is under the age of 26 on October 1st of the year in which he wishes to take up his award. Effectually, therefore, he or she must be under 25 when making application. In exceptional circumstances, when, for example, study has been interrupted by military service, the Commission may consider applications from candidates over 26, but under the age of 28. The majority of scholars appointed, however, are in their early twenties.

Married candidates are eligible, but, where other things are equal, single persons are preferred. A man who is married before he applies for an award will receive an additional stipend. A man who marries after he applies may receive the additional stipend after the end of his first year of tenure. The Commission is of the opinion, doubtless shared by many of the universities in the United Kingdom, that it is desirable for a Marshall scholar to engage as actively as possible in the life of his college or university, especially in his first year.

Allowances

A Marshall scholar at present receives £550 ($1540) a year, plus tuition fees at his British university. He may also receive a grant for books and for travel within the United Kingdom in connection with his courses of study. The additional allowance for a married man is £200 ($560) a year. Round-trip fares are paid between a scholar's place of residence in the United States and his university in the United Kingdom. The fares are also paid for the families of scholars who are eligible for the marriage allowance.

A Marshall scholarship is tenable for 2 years, and it may be extended to a third, at the discretion of the Commission. All scholars are required to proceed to a degree. No scholarship can be awarded to a candidate who is unable, or unwilling, to enroll for a course of study or research leading to a first or higher degree during its tenure. In this respect Marshall scholarships differ from many other major scholarships offered for study overseas. Work done in Britain must count towards a British degree, and not towards a higher degree of an American university, though, in fact, the experience of Marshall scholars who have resumed study in the United States after taking a first British degree has shown that some reduction can be expected in the time taken to acquire a higher American degree.

Choice of University

As far as possible, the choice of university is left to the candidate, though he is required to name two in order of preference. To do this and to select an appropriate degree course, he needs information not readily accessible in the United States. Some advice on how to proceed is provided with the materials supplied to candidates who write for application forms and some is available from faculty members on their campuses. Even so, means have yet to be found of disseminating more widely in the United States information on the wealth of opportunity to be found in British universities other than Oxford and Cambridge.

The scholarships were not many years old before it was realized that candidates would select the best-known universities unless their choice was restricted in some way. Under the present regulations, if a candidate's first choice is Oxford, or Cambridge, or London, his second must be a university other than one of these three.

Generally, however, scholars wish to enroll in one of these institutions. Oxford has received 25 Marshall scholars, Cambridge 20, London 15 (11 at the London School of Economics), Birmingham, Manchester, and Edinburgh have had 2 each, and Bristol, Exeter, Glasgow, Leeds, Nottingham, and St. Andrews have had 1 each. Of the 24 scholars going into residence this year, 16 will go to Oxford, 6 to Cambridge, 1 to London, and 1 will go to the University of Durham.

First Choice Where Possible

In placing the scholars, the Commission departs from their preferences only when one has chosen a university which is obviously unsuitable for his proposed course of study, or in which it is impossible to place him. The Commission has occasionally encountered difficulties of placement which have led to a readjustment of the course of study, with the concurrence of the scholar-elect on the advice of his future academic advisers. For example, a major in creative writing, hoping to find a British degree course in journalism where none exists, was placed as a postgraduate student of English literature.

While seeking to attract the candidate's attention to the wide range of studies and considerable facilities of the 23 universities other than the favoured 3, the Commission hopes at the same time to widen the fields of study chosen. The only restriction here is that the field must be one in which the candidate can hope to complete his degree requirements in 2 years of study.

Not surprisingly, English and history have led the field in popularity (15 scholars each), and the combined study of politics, philosophy, and economics at Oxford has attracted 11 scholars. Physics has led the sciences, with eight scholars, but in science and mathematics generally the number of candidates has been disappointingly small, perhaps because American students are unaware of the facilities in British universities for the study of the natural and the applied sciences, and certainly because they are offered many opportunities for study and for research at home.

Bachelor's or Higher Degrees

While it is required that a Marshall scholar should read for a degree at his British university, it is not required nor is it always appropriate that this should be a second or higher degree. Students in British universities reading for an advanced degree cus-

tomarily carry out independent research under the general, but not close, supervision of a senior member of the faculty of the department in which he is working. British universities do not have graduate schools, as such. There are relatively few courses of instruction for postgraduate students and none are "required." Because of the specialized nature of study in British universities, the student from abroad has often found that he can benefit more from taking a good first degree than he can from attempting a higher degree, unless he already has had some experience in graduate study. A British undergraduate going up to a university for the first time will already have spent his last 2 years at school in specialized preparation in two or three subjects related to his proposed course of study at the university. He then reads for 3 or 4 years for an Honors degree in a particular subject, or group of related subjects. He does not enjoy the advantage of the wide spread of studies associated with an American first degree.

Because these Honors degree courses are highly specialized, all of them offer opportunities for study in depth, and at some universities, and in some fields, subsidiary subjects are also required.

There are also some joint Honors degrees, such as the highly popular politics, philosophy, and economics at Oxford, and philosophy and economics or philosophy and psychology at London.

A Marshall scholar, then, with no prior experience of graduate work has frequently found that his most practical and most profitable course at the United Kingdom university is to read for an Honors degree, preferably in a subject which has already formed part of his undergraduate major. He finds that a considerable measure of specialized attainment may be demanded by such a course, but that he is usually able to complete the requirements for an Honors B.A., or equivalent degree, in the 2 years of his normal tenure. This is more often possible in a 3-year degree course, where the graduate of an approved university may be exempt from the first year, than it is in some 4-year courses, such as, for example, chemistry at Oxford.

The preliminary demands of an Honors degree course are often taxing, and the working methods in a British university may well be foreign to the scholar. Substantial success in the final degree examinations requires that the student be prepared to spend regular hours of study during vacations as well as during term time under his own discipline, and the strain imposed by the final examination is often considerable. At Oxford, for instance, the B.A. candidate in his final exams is required to write nine, ten, or more 3-hour papers, and getting his degree depends on the outcome of that one week of examinations.

Results and Subsequent Careers

To date, Marshall scholars have indeed achieved substantial successes at their universities. Seventeen Marshall scholars have obtained higher degrees, including eleven doctorates, and those who have taken a second bachelor's degree have made good records. Four Marshall scholars have taken First Class Honors in their final examinations, and all four of them were women.

It is too early to be able to report much about the subsequent careers of the scholars, but several are already teaching in universities and colleges in the United States, and some have taken up appointments in government. An alumni association has been formed, and a regular newsletter is produced, now that a number of scholars have returned home.

Expanding the Scheme

The increase in the number of awards made annually from 12 to 24 will help to make the Marshall scholarships more widely known on American campuses. It is hoped also that, by increasing the opportunities, more well-qualified candidates will come forward from schools which have not so far been able to count a Marshall scholar among their alumni.

A new regional distribution of awards has been established. Hitherto, the United States was divided for selection purposes into four regions, Eastern, Southern, Middle Western, and Pacific, with centers in New York, New Orleans, Chicago, and San Francisco, and from each region three awards were made annually. The regional areas are now regrouped, and a fifth, centered at Boston, has been set up. Four scholarships are now to be awarded in each of the five regions, and four "scholarships-at-large" will go to candidates chosen from among the regional reserves. Candidates may apply in the region in which they live or in the region in which they have received at least 2 years of college training. The deadline for the receipt of completed applications is the 31st of October of the year preceding the date of taking up the award.

Office of Education Studies and Surveys

State Boards Responsible for Higher Education

RECOGNIZING the increasingly important role of the organizational structure through which public higher education in the United States is governed, the Office published earlier this year a study of the organization of public higher education in the 50 States and, in particular, of the responsibilities, authority, and operating methods of each of the State boards responsible for higher education. The 254-page report (title: *State Boards Responsible for Higher Education*), written by S. V. Martorana and E. V. Hollis, is available through the Superintendent of Documents (see New Publications Section, p. 20). The following is a brief summary of the findings of this study.

Over the Nation the pressures of rapidly increasing enrollments and costs have stimulated a surge of interest in the organization and structure of higher education within the States. Numerous studies have been and are being made in an effort to clarify the functions to be performed by different types of institutions and to fit them into a coherent statewide plan. Among the States recently authorizing such surveys are California (which developed a master plan recently adopted by its legislature), Colorado, Illinois, Iowa, Kansas, Louisiana, Michigan, Mississippi, Missouri, New Mexico, Ohio, Pennsylvania, Rhode Island, Virginia, and Washington. The general purpose expressed in all the legislation calling for these studies is the evolvement of unified administration of higher education within a State, considering both its present and its future needs.

The result of this activity in the States has been to foster a need for an overall study to present the current status of higher education administration and to serve as a starting point for the modification and modernization of existing State structures. It is hoped that the Office of Education State board study will fill such a need with its analysis of 209 State boards concerned with higher education in the 50 States and the outlying possessions.

In order to facilitate use of the study, it has been divided into two parts: Part I summarizes findings regarding the higher education structures in all the States, notes trends, and appraises the overall picture; Part II presents each State's administrative organization for higher education, with descriptions of the individual State boards involved. It should serve as a reference book for those interested in detailed information.

Defining an institutional unit as a college or university, or a branch, campus, or center of a college or university, considered to have sufficient identity to be classified as a separate institution, the authors report that the 209 State boards are responsible for 748 institutional units.

The boards' functions may be classified into four categories: (1) *Governing board*—one charged with direct control and operation of a single institution, such as The Board of Trustees of the Ohio State University or the Regents of the University of Oklahoma; (2) *coordinating board*—one which is legally responsible for organizing, regulating, or otherwise uniting overall policies or functions in areas such as planning, budgeting, and programing, but which does not have authority to govern institutions, such as the Council of Higher Education for Virginia and the Texas Commission on Higher Education; (3) *governing-coordinating board*—one having legal responsibility for functioning both as a coordinating board and as a governing board for two or more institutional units, such as The Regents of the University of California and the Board of Trustees, State University of New York; and (4) *"other" board*—one which has responsibility at the State level for supervising, accrediting, certifying, advising, or performing a similar function in relation to public higher education institutions, but which does not have specific authority to govern or coordinate, as is the case for many of the State boards of education with regard to higher education. Using these categories, the authors classify 108 boards as governing boards, 8 as coordinating, 65 as governing-coordinating, and 28 as "other." Seven of the coordinating boards have been created since 1950.

Almost half of the 748 institutional units (359) are responsible to governing-coordinating boards; and if to these are added the 109 units for which these boards have a less direct responsibility, then two-thirds of all institutional units are responsible to governing-coordinating boards.

Not counting Hawaii, which has only one institution of higher education under a State board, there are only six States which have *not* grouped two or more institutional units under either coordinating or governing-coordinating boards. Of these six States (Delaware, Missouri, Ohio, South Carolina, Washington, and Wyoming), Ohio has a voluntary and unofficial plan for interinstitutional coordination operating through the offices of the presidents of the several State-supported institutions.

Among the governing-coordinating boards the coordinating power is not usually set forth in specific terms as a legal responsibility of the boards but is assumed to be a hidden power in the governing authority granted to the boards.

The conclusions drawn are listed below:

A. The pattern for government of higher education institutions within a State is set largely by historical factors in that State. Governing boards have become governing-coordinating boards by the establishment of new centers or by the addition of new units within the existing powers of the boards rather than by specific legislation.

B. There appears to be a trend away from having higher education institutions under a State board of education, as evidenced in the proposals of the California Master Plan, the establishment of the Massachusetts State Board for Regional Community Colleges, the transfer of the control of Oregon Technical Institute from such a board to the State board of higher education, and the transfer of the control of Texas Midwestern University from the State board of education to a governing board.

C. Coordination of all higher education institutions in a single Statewide board is developing at an accelerated rate, as seen by the recent creation dates of these boards and by the increasing number.

D. Central office staffs and operating budgets of governing-coordinating and coordinating boards are generally insufficient to cope with the increasingly heavy work loads with which they are saddled.

E. The method of selecting members to serve on State boards responsible for public higher education has remained fairly stable during the past decade, with only a slight increase in ex officio and elected members. There is no clear evidence that one method of selecting members to serve on State boards concerned with higher education is superior to another in insuring an enlightened, loyal, and energetic leadership.

Four recommendations were made:

A. If a fresh start could be taken in a State having nine or more public colleges, or if changes can be effected in a gradual and orderly manner and without loss of valuable local strength, authors would recommend a governing board for each institutional unit and, over all such governing boards, a statewide coordinating board with major duties of interinstitutional programing, budget coordination, and long-range planning.

B. A proper balance of authority has to be maintained between the coordinating board and the governing boards being coordinated. The former should have enough authority to carry out its functions but not the power to interfere with management functions belonging to institutional governing boards.

C. A governing-coordinating board should view its chief executive officer and his staff as having a responsibility for the coordination, planning, and programing of all institutional units in the system, not for administering only the largest or most complex unit. Having done this, the board should organize its central administrative staff to recognize the institutional identity of each unit under the board, give it a purpose and program fitted to the tasks of higher education in the State, and insure for it a full sense of educational mission.

D. Depending on the size and complexity of the units, a governing-coordinating board should be responsible for not more than 9 institutions; when a point of development of 10 or more colleges responsible to a single board is reached, institutional boards for strictly institutional matters should be created and the overall board should assume only coordinating, rather than governing-coordinating, duties.

Private Gifts and Grants to Institutions of Higher Education: 1957–58

A TOTAL of nearly three-quarters of a billion dollars in cash, services, and goods was given to institutions of higher education by individuals and nongovernment organizations in the fiscal year 1957–58, according to reports recently summarized at the Office of Education. The total of $747,773,192 reported amounts to something like $4.31 for every man, woman, and child in the July 1, 1957, population of the United States (including those outlying parts which maintained higher education facilities that year). It is the equivalent of $255.39 per stu-

dent registered for resident degree-credit work in all institutions of higher education in the first term of 1957–58, or $476.74 per student enrolled in privately controlled institutions and $82.88 per student in publicly controlled institutions.

The total, the largest for private gifts and grants reported by the Office of Education up to the present, includes $29,043,577 in real estate and other plant assets donated to institutions, an item not carried in previous reports. If we deduct this item, the total is still well over $718 million in gifts of cash or contributed services, which exceeds the 1955–56 total of $608 million by a little more than 6 percent.

As has been the case for many years, most of these gifts were reported by privately controlled institutions. In 1957–58 every dollar given by a private source to a publicly controlled institution was matched by approximately $4.48 given to one privately controlled. This proportion is similar to that reported in 1953–54 and deviates only slightly from the one reported in 1955–56.

Private gifts and grants to institutions of higher education,[1] by control of institution and fund (purpose)—1957–58 [2]

Item	Amount (in thousands of dollars)	Percent [3]	Per capita [4]
Grand total	$747,773	100.0	$4.31
By control of institution:			
Private	611,390	81.8	3.52
Public	136,383	18.2	.79
By fund (purpose):			
Educational and general	324,971	43.5	1.87
Endowment funds	192,714	25.8	1.11
Plant expansion	186,215	24.9	1.07
Student aid funds	32,799	4.4	.19
Annuity, living trust funds	7,825	1.0	.05
Student loan funds	3,249	.4	.02

[1] Includes donations of real estate and plant, amounting to $29,043,577.

[2] Source: Reports of institutions to the Office of Education.

[3] Based on unrounded numbers.

[4] Based on estimated population of 173,482,000 as of July 1, 1957 (armed forces overseas excluded).

Gifts for current educational and general purposes (approximately $325 million, or 43.5 percent of the total) exceeded gifts for the various other purposes. If we add gifts for student aid ($33 million, or 4.4 percent) to those for educational and general purposes, we find that gifts for immediate use in the day-to-day activities of higher education represent almost half of the total.

The firm faith of the Nation in the permanence of higher education is emphasized by the fact that gifts to increase general or restricted endowment funds plus those to increase annuity and living trust funds and student loan funds totaled nearly $204 million, which was a little over 27 percent of the grand total. Cash and other gifts for expansion of the permanent physical plant came to another $186 million, making the grand total for either permanent funds or permanent plant additions a little more than $390 million.

Although we asked colleges and universities to include sources of gifts and grants in their 1958–59 reports, we cannot derive precise totals by source from the reports we received, for some listed large amounts under "other sources" and some listed only a total. We realize that some colleges and universities cannot provide precise figures because their finance officers have difficulty in classifying their original data. To illustrate: When an alumnus of an institution who is also a member of a church or other religious organization makes a contribution to his alma mater, his contribution may be credited to either the church or the alumni group. In many instances the finance officer has no way of knowing whether an individual donor is an alumnus or not. The following figures, in millions, on contributions from specified sources account for only about half of the total reported private gifts and grants: Foundations ($122), churches ($78), alumni ($78), business ($76), and contributed services ($37).

More detailed data will be included in the *Biennial Survey of Education 1956–58*, Chapter 4, Section II, *Statistics of Higher Education 1957–58, Receipts, Expenditures, and Property.*

H. G. Badger
Division of Statistics and Research Services

Bachelor's Degrees Conferred in Engineering Drop During 1959–60

Reports from all but a few institutions indicate that the number of bachelor's degrees conferred in engineering in 1959–60 decreased by about 2½ percent from the 38,184 conferred in 1958–59, according to the Educational Statistics Branch.

Last year the Office of Education predicted the decrease would occur because undergraduate engineering enrollments had decreased for two consecutive years (See Circular No. 617, "Engineering Enrollments and Degrees: 1959," by W. Tolliver and H. Armsby). The decrease in the number of bachelor's degrees conferred in engineering is all the more significant because the decline in undergraduate engineering enrollment last year was greater than it was a year earlier, indicating that next year the drop in bachelor's degrees might be even greater.

The Department of Labor reports that the employment outlook for engineering graduates is generally favorable, but that employers are exercising more and more selectivity in their hiring practices. Futhermore, the Department expects the engineering profession to continue to expand in the next few years and over the long run.

A decrease in the number of bachelor's engineering degrees conferred may not in itself be a matter of serious concern at this time if the national needs are met by an increase in the number of students majoring in mathematics or physical science fields closely related to engineering. The number of mathematics majors is increasing: from the fall of 1958 to the fall of 1959 junior year students majoring in mathematics increased by 17.6 percent. However, such spectacular increases did not occur in the physical science fields: Majors in chemistry increased by 1.7 percent and in physics by 3.6 percent, but majors in geology decreased 28.7 percent. Further study of the causes of the decline in engineering enrollments and degrees and decline in geology enrollment appears warranted.

When all of the reports are analyzed it is estimated that the master's degrees conferred in engineering will show an increase from the previous year of more than 5 percent and the doctor's degrees an increase of at least 10 percent.

W. Tolliver and J. Lewis
Division of Statistics and Research Studies

Estimated Future Graduates in Science and Math

For each 1,000 junior-year students majoring in science and mathematics in a given year, 818 students graduate with degrees in those field a year later. This ratio and similar ratios for specific disciplines within the broad fields of science and mathematics have been obtained by relating data from the survey of earned degrees to data from the survey of junior-year science and mathematics students.

The figure 818 per 1,000, or simply 0.818, is the ratio between the 41,318 students who *graduated* in 1958–59 with degrees in science and mathematics and the 50,513 *junior-year* students who were counted as majors in science and mathematics in the fall of 1957, when the first survey in the series of such juniors was made.

The relation between these numbers is expressed as a ratio rather than as a percentage for a number of reasons, the more important ones being these: (*a*) Not all students counted as juniors in 1957 took their degrees in 1958–59; (*b*) some of the juniors who were reported as majors in science or mathematics in 1957 took their degrees in other fields in 1958–59; and (*c*) the 1958–59 graduates included part-time students, extension students, and others who were not classified in science curriculums or as juniors in 1957. These considerations do not, however, necessarily affect the stability or the predictive value of the ratio, and indeed there is reason to believe it will probably remain close to 0.81 or 0.82 for some time.

Assuming that the ratio 0.818 holds for the next 2 years, we can find the number of graduates in science and mathematics by applying the ratio to the 55,777 junior-year majors in science and mathematics reported in the fall of 1958, and also to the 57,265 reported in the fall of 1959. These computations indicate that approximately 45,600 graduates in science and mathematics will be reported for 1959–60, and about 46,800 for 1960–61.

A report now in preparation will provide similar ratios and estimated numbers of graduates for some 20 individual disciplines. The data are probably most reliable for the biological sciences as a whole, the mathematical subjects, and the physical sciences as a whole. Figures for each of these groups, including percentage changes over the 2-year period 1958–59 to 1960–61, are given below.

The ratios are 0.751 for the biological sciences, 0.988 for the mathematical subjects, and 0.810 for the physical sciences. Comparing these figures with the overall ratio 0.818 suggests that, during the interval between the beginning of the junior year and graduation, the biological sciences lose students to other fields relatively often, mathematical subjects tend to attract students from other fields, and the physical sciences tend to hold their own, or at least

to balance any losses of students with corresponding gains.

Applying the ratio 0.751 to the 21,207 junior-year majors in the biological sciences in 1959, gives an estimated 15,900 graduates in those fields in 1960–61, an increase of 6.9 percent over the 14,894 graduates in 1958–59. Applying the ratio 0.988 to the 14,065 junior-year majors in mathematical subjects, in 1959 gives an estimated 13,900 graduates in 1960–61, an increase of 54.0 percent over the 9,019 graduates in 1959–60. The ratio 0.810 applied to the 19,295 junior-year majors in physical sciences in 1959 yields an estimated 15,600 graduates in 1960–61, an increase of only 1.1 percent over the 15,460 graduates in 1958–59. This relatively low rate of increase for the physical sciences as a whole is due in largest part to a decrease in the number of students majoring in geology.

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Division of Statistics and Research Services

National Defense Education Act Notes

African Languages in U.S. Colleges

A comprehensive program for expanding and improving instruction in the languages spoken by peoples of the emerging nations of Africa is being undertaken by the U.S. Office of Education and U.S. colleges and universities through the National Defense Education Act. The program, which is costing about $456,000, includes development of instructional materials through research contracts with colleges and universities, support of language and area centers at colleges and universities with expansion of instruction in African languages and related studies, and fellowships for advanced study in African languages and area studies.

The greater part of the funds is devoted to research in African languages and development of instructional materials to be used by American scholars, students, and experts in Government and business. About $200,000 has thus far been committed for 13 research projects, and another $100,000 has been contracted for in fiscal years 1961 and 1962.

One of the earliest of these projects, a survey of our national resources and needs for the study and teaching of African languages, has revealed that no more than ten scholars in the United States are competent in even one African language. As of September 1, 1959, one of the ten scholars—William E. Welmers of the Hartford Seminary Foundation—had a full-time professional commitment to teach or conduct research in African linguistics. Support under NDEA, however, is enabling several of the others to devote full time to African studies. In addition, two of the world's most eminent African scholars, Jack Berry and Desmond Cole, have been brought under research contracts to this country to head research projects. Professor Berry, Director of the African Division of the London University School of Asiatic and African Languages, will direct a project involving preparation of instructional materials in West African languages. Professor Cole, University of Witwatersrand, Johannesburg, Union of South Africa, is an expert in Bantu languages.

In March 1960, Georgetown University, under contract with the U.S. Office of Education, conducted a national conference on African languages. The participants were asked to make recommendations for a program of research designed to increase the Nation's competence in African languages. The findings of the conference were used by the National Defense Language Development Program in planning its African language research projects.

Two of the projects, both being conducted at the University of California, Los Angeles, deal with languages of North Africa. One provides for the preparation of a comprehensive bibliography of the Semitic languages, of which Amharic, the National language of Ethiopia, and Tigrinya, the most widely spoken language of Eritrea, are the principal components. The other project provides for the preparation of a comprehensive bibliography of the Berber languages—Shilha, Rif, and Kabyle—and a structural analysis of Rif and Kabyle.

In four of the projects instructional materials for the languages of West Africa, the most densely populated area of Africa and the focal point of the nationalism of Sub-Saharan Africa, will be developed. Dr. Welmers, working with Kenneth E. Griffes of

Baptist Mid-Missions, has already developed 25 lessons of a basic course in Gio, which is widely spoken in Eastern Liberia and the Ivory Coast. These lessons, including recorded drills, will be distributed as examples of linguistic methodology and for instructional purposes to about 12 institutions now interested in West African languages.

R. W. Wescott and Hans Wolff of Michigan State University will develop extensive basic instructional materials for Bini, Yoruba, Ibo, and Twi, languages spoken widely in Nigeria, Togoland, the Gold Coast, and the region of the lower Niger now recognized as the sovereign states of Gabon and the Congo Republic.

Robert G. Armstrong of Atlanta University, who is now conducting field investigations on Yoruba, will prepare recordings and accompanying texts for use in the preparation of a reference grammar and a basic course. Upon completion of this project for the Office of Education, Dr. Armstrong will become field director of a project, sponsored by Columbia University and the Ford Foundation, calling for a systematic classification of the languages of West Africa.

Lorenzo D. Turner, of Roosevelt University (Chicago) will study Sierra Leone Creole—a unique language consisting in part of English which has been radically transformed by prolonged African influences. Professor Berry is coming to Chicago to collaborate with Dr. Turner in the preparation of a reference grammar and an instructional anthology of readings selected from the folk and formal literature of Sierra Leone.

Three projects deal with the languages of Central Africa. Father Alphonso Loogman of Duquesne University will prepare a basic Swahili grammar and an anthology of Swahili reading materials. Swahili is widely spoken in Central Africa, particularly in the Republic of the Congo, Uganda, Kenya, and Tanganyika. Mark Hanna Watkins of Howard University will develop basic drill materials for both Yoruba and Swahili. The object of one contract will be the preparation of basic course materials for the three principal Bantu languages—Sutu, Ganda, and Ubundu—which are spoken widely in the Union of South Africa and adjacent areas to the north. Professor Cole will spend a year doing basic field research and recording significant linguistic data. Afterward he will come to Georgetown University to conduct experimental classes in these languages and to prepare basic instructional materials with the assistance of native speakers and advanced students of linguistics.

In this comprehensive research program the Office of Education will have the part-time or full-time assistance of 14 competent linguists and about the same number of junior linguists or native-speaking assistants. Research projects will involve a score of African languages, and materials for basic instruction will be prepared for about a dozen of the most important.

Another phase of the National Defense Language Development Program, language and area centers, provides support to colleges and universities for the expansion of instructional facilities in languages and related studies. Of the 46 language and area centers being supported in 1960–61, four are in African languages. Instruction in Swahili, Shona, and Ewe is being supported with Federal funds at the University of California, Los Angeles; Swahili at Duquesne University; Swahili, Yoruba, and Tswana at Howard University; and Yoruba and Ibo at Michigan State University. Nearly 20 million people are native speakers of these languages. Except for the one at Howard University, all these language programs are new and Federal funds are being used to help the institutions hire new faculty including area studies people, develop language laboratories, and add to their libraries. The Center at Howard will be supported for the second year in 1960–61, the other three centers being supported for the first time.

Under another program of the NDEA—the Graduate Fellowship Program, Title IV—two programs in African studies have been approved; one at Boston University with four fellowships, was begun in 1959–60 and has been renewed with an additional four fellowships for 1960–61; the other program, also with four fellowships, is at the University of California, Berkeley, in African studies and is beginning this fall. The fellowships are for 3 years of study; the institution receives a payment of up to $2,500 for each fellow.

The research, instructional and fellowship programs described above may well represent a commitment of manpower and funds to the development of African languages greater than the sum total of our national effort in this field in all times past. It can be expected to go a long way toward filling a serious gap in our Nation's understanding of the languages and cultures of the world.

Other Program Notes

$1 Billion A Year for Basic Research

In 1959–60 total funds for basic research in the United States reached an estimated $1 billion and total funds for research and development reached $12 billion, according to the National Science Foundation. NSF bases its estimate on statistics recently reported in "Funds for the Performance of Basic Research in the United States, 1953–58," *Reviews of Data on Research & Development*, No. 22. For survey purposes, the NSF defines basic research as scientific inquiry in which the primary aim of the investigator is greater knowledge or understanding of the subject rather than a practical application.

Extensive NSF surveys of the 1953–58 national research and development effort indicate that funds for basic research rose from about $430 million in 1953–54 to more than $830 million in 1957–58, an increase of 93 percent. Throughout this period, funds for basic research continued at about 8 percent of the total estimated R&D funds which reached $12 billion in 1959–60.

The substantial rise in funds for basic research is part of a "long-term increase in scientific and technological activity stimulated, in particular, by the challenging problems of the past two decades," the Foundation said.

Colleges and universities expended about half the national total on basic research in the 1957–58 survey year, and industry about a third of total funds. Performance of basic research by the Federal Government accounted for about 13 percent of the funds and other non-profit institutions for about 6 percent.

The Federal Government has remained the *source* of the largest amount of funds for basic research from 1953–54 through 1957–58.

No important change was found in the distribution of total funds for the performance of basic research in the field of science over the years covered. The physical sciences accounted for over $550 million, or approximately two-thirds of all the natural sciences funds in 1957–58, and the life sciences for the remainder, or about $280 million.

Copies of *Reviews of Data on Research & Development*, No. 22, are available from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., at 15 cents each.

Fellowships for Health Research

Information about research fellowships and traineeship programs of 4 Federal and 22 non-governmental agencies is now available in a single report, *Fellowships for Health Research*, issued by the National Health Council. The report describes opportunities for advanced education available through the National Research Council, the National Science Foundation, the Office of Education (National Defense Education Act), and the U.S. Public Health Service and fellowships obtainable from voluntary health agencies, foundations, and insurance and pharmaceutical organizations.

"This report brings together facts about little known opportunities for advanced training and preparation for careers in health research. It will be helpful not only to college students, counselors and educators, but also to the health professions, agencies, and foundations," said George E. Wakerlin, chairman of the Council's Committee on Research and medical director of the American Heart Association. "Although scholarships for undergraduate medical education are extremely limited and should be greatly increased, there has been in recent years a substantial expansion of opportunities for graduate education leading to health research careers. These fellowship opportunities should be more widely known and brought to the attention of those who are eligible both in the United States and foreign countries. In addition, we hope that this report will stimulate the creation of additional fellowships in the physical, biological and social sciences."

The report gives details about the types of research fellowships, eligibility, the amount of the awards, the length of time for which the fellowships are awarded, location of training, and the time schedule for applications.

Copies of *Fellowships for Health Research* may be purchased for $1.00 each from the National Health Council, 1790 Broadway, New York 19, N.Y.

and about 15 percent of those in social sciences, were participating in Federal programs. Few professors in humanities were participating. The difference between this pattern and the pattern for Federal funds and for private funds shows that the university is making an effort with the resources available to support research in fields of study that are either not of interest to Federal agencies and private donors, or not particularly attractive to them.

Other Federal Programs

In addition to research programs, the university supplied faculty members for federally sponsored long-term educational missions in at least three foreign countries. Federal agencies sponsored other faculty members who took leave to attend international symposia, conferences, or institutes; to conduct research in foreign countries; or to study at various universities in the United States. The university also supplied many staff members for advisory committees serving programs of Federal agencies. For example, seven faculty members were serving on different advisory committees of a single Federal agency.

Students were being assisted by the Federal student loan fellowship and scholarship programs and ROTC programs; in addition, some students were earning money by working with research and training programs. The university was using Federal loans for construction of dormitories and grants for medical research facilities. The correspondence study division was receiving Federal funds for education of persons in the armed services. In short, Federal activity was omnipresent, its influence was pervasive and basically helpful.

The university was also responding to requests for service from its own State government. In 1958–59, as many as 15 university departments received grants from at least 6 divisions of State government for specialized research and training, including the conservation department, department of agriculture, library commission, public service commission, board of mental health, and department of nursing. Some of these grants may have been from Federal funds given to the State division.

Summary and Implications

This snapshot of Federal programs in a complex State university illustrates the growing interdependence of the Federal Government and major institutions of higher education. Pictures of other institutions, including major private universities, would have similar features and outlines. Land-grant colleges would tend to show a broader band of participation because of their federally sponsored programs in agricultural research and extension. Colleges which emphasize the engineering sciences and technology might show a narrower band of participation and heavier concentration of funds. In either, the broad extent of participation is enough to have pervasive influence on the life of the institution.

The picture described here dramatizes the rapidly expanding dimension of research and the strong direct influence of Federal programs upon graduate and professional education. It indicates that major universities are prime resources in the accomplishment of National objectives which are based upon acquiring new knowledge and training the people who discover it.

University research is extending into areas other than security and defense. The efforts to conquer famine, pestilence, and disease are beginning to match the efforts to prevent war. These fields of endeavor heavily preoccupy current research activity, whether spurred by governmental or private initiative.

The upsurge in specialized Federal activity and the urgencies which impel it are striking at a time when the universities must also teach unprecedented numbers of students despite growing shortages of highly qualified staff members in many fields.

The facts presented here tend to emphasize the Federal contribution, without enough credit to the State's contribution to what is genuinely a cooperative enterprise. In proper perspective, the picture would show a rapidly growing Federal-State cooperation in solving problems regional or national. A new chapter is being added to the long history of success in Federal-State cooperation as represented in the experience of the land-grant colleges. The manner and the pattern of cooperation are currently different. Federal agencies are dealing with individual institutions, both public and private. The arrangements are by grant or contract, not by appropriation. The effect, however, has been to enlist the resources

of all of the Nation's major universities in the accomplishment of objectives defined by the National Government as necessary in providing for the general welfare and the common defense.

By tradition and difference in source of support, the problems of independently supported colleges and universities in developing cooperative relationships with Federal agencies are different from those of State-supported institutions. Yet, independently supported universities are heavy participants in current Federal programs, and any other pattern of future cooperative relationship between the Federal Government and institutions of higher education is likely to include them.

The Title X evaluation of Federal programs in higher education is bringing together an inventory of Federal programs and the types of colleges which participate in them. Studies in a sample of colleges, large and small, will proceed during the year to show the nature and extent of the impact, direct or indirect, of federally sponsored programs upon institutional objectives and programs and upon their faculties and students.

Many questions of policy suggest themselves—questions of government policy and questions of institutional policy. The questions vary with the agencies, institutions, or persons affected. The central questions are:

(1) Will present patterns of cooperation between Federal agencies and institutions of higher education be adequate for the exigencies of the foreseeable future?

(2) If not, what patterns will best insure that the Nation's resources in higher education maintain the strength and freedom necessary to meet their growing responsibilities for high quality education and specialized national service?

Instructional departments of the university

[x=departments participating in Federal programs in 1958–59]

x Agronomy
x Anaesthesiology
x Anatomy
x Animal husbandry
x Anthropology
Art education
Art history
x Astronomy
x Bacteriology
x Biochemistry
x Botany
x Chemistry
Classics
Comparative literature
x Dairy husbandry
x Dairy foods
Economics
x Economics, agricultural
x Education
Education, agricultural
x Education, physical (W)
Education, physical (M)
x Engineering, agricultural
x Engineering, experimental stations
x Engineering, chemical
x Engineering, civil
x Engineering, electrical
x Engineering, mechanical
Engineering, mechanics
Engineering, mining and metallurgical
English
x Entomology
French
x Genetics
x Genetics, medical
x Geography
x Geology
German
x Hebrew studies
History
History, medicine
History, science
Home economics
Horticulture
x Journalism, agricultural
Linguistics
x Mathematics
x Medicine
x Meteorology
x Microbiology
Music
x Neurology
Obstetrics and gynecology
x Oncology
x Pathology
x Pathology, plant
x Pediatrics
x Pharmacology
Philosophy
x Physics
x Physiology, chemical
x Physiology
x Preventative medicine
Political science
x Poultry husbandry
x Psychiatry
x Psychology
x Radiology
Scandinavian studies
Slavic
Social work
x Sociology
Sociology, rural
x Soils
x Spanish and Portuguese
x Speech
x Surgery
x Surgery, cancer
x Veterinary science
Wild life management
x Zoology
Commerce
x Nursing
x Pharmacy
x Law
x Graduate school
x Enzyme institute

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From the Office of Education

Research in School and College Personnel Services, Summaries of Unpublished Studies, September 1956–September 1958, by Paul MacMinn, Carroll H. Miller and Frank E. Wellman. Bulletin 1960, No. 10. Washington, U.S. Government Printing Office, 1960. Paper, 136 p. 55 cents. (OE–25007.)

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Schools in Our Democracy. Washington, U.S. Government Printing Office, 1960. Pamphlet, 26 p. 15 cents.

Presents the views of Lawrence G. Derthick, U.S. Commissioner of Education, on five basic issues in American education.

New Dimensions in Higher Education, Number 1, Independent Study, by Winslow R. Hatch *and* Ann Bennet. Washington, U.S. Government Printing Office, 1960. Paper, 36 p. 25 cents. (OE–50005.)

The first in a series of documents dealing with major educational problems. These papers, which are prepared primarily by the Division of Higher Education, draw upon the Division's Clearinghouse of Studies on Higher Education. This first publication describes and analyzes programs of independent study in this country and suggests sources of additional information.

New Dimensions in Higher Education, Number 2, Effectiveness in Teaching, by Winslow R. Hatch *and* Ann Bennet. Washington, U.S. Government Printing Office, 1960. Paper, 28 p. 20 cents. (OE–50006.)

Reviews research carried on since 1955 on class size, "general" methods of teaching, "problem-oriented" approaches to teaching, and "directed" learning.

New Dimensions in Higher Education, Number 3, The Experimental College, by Winslow R. Hatch. Washington, U.S. Government Printing Office, 1960. Paper, 13 p. 15 cents. (OE–50010.)

Reports the degree to which experimental colleges and programs utilize independent study and novel approaches to teaching and learning. It also suggests additional experiments.

New Dimensions in Higher Education, Number 4, Impact of College, by Mervin B. Freedman *and* Winslow R. Hatch. Washington, U.S. Government Printing Office, 1960. Paper, 27 p. 15 cents. (OE–50011.)

Summarizes the progress of social scientific research in identifying the components by which the degree of change in student personality, character, and values may be ascertained and indicates the contributions made by recent studies to understanding of the factors influencing these changes during student years.

New Dimensions in Higher Education, Number 5, Management of Learning, by E. D. Duryea *and* Winslow R. Hatch. Washington, U.S. Government Printing Office, 1960. Paper, 37 p. 20 cents. (OE–50013.)

Surveys what is being done to increase knowledge of administrative proceedings and relationships as they involve boards, presidents, and general administrative officers in the field of education, with emphasis upon the administration of a college or a university as an entity. Three general categories are presented: (1) Search for administrative theory; (2) analysis of process, structure, and institutional setting; and (3) accumulation of operating data.

State Boards Responsible for Higher Education, by S. V. Martorana *and* Ernest V. Hollis. Washington, U.S. Government Printing Office, 1960. Paper, 254 p. $1.50. (Circular No. 619, OE–53005.)

Other Government Agencies

Weather Modification, First Annual Report for Fiscal Year Ended June 30, 1959. Washington, U.S. Government Printing Office, Washington 25, D.C. Paper, 15 p. 35 cents. (National Science Foundation, NSF 60–24.)

Nongovernment Publications

Obtain direct from the publisher. Prices are indicated when known.

Engineering and Scientific Education, Foundation of National Strength, proceedings of Conference, October 31–November 2, 1957. Processed, 100 p. (Single copies free on request to educators from the Scientific Manpower Commission, 1507 M Street, Washington 5, D.C.)

Reports the conference, sponsored by the Engineering Manpower Commission of Engineers Joint Council, the National Academy of Sciences, the National Research Council, the National Science Foundation, the Scientific Manpower Commission, and the local sponsor, the Western Society of Engineers.

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